

Breast Cancer Screening in Racialized Women

Implications for Health Equity

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The Wellesley Institute engages in research, policy and community mobilization to advance population health.

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EXECUTIVE SUMMARY



Breast Cancer Screening In Racialized Women: Implications For Health Equity

Inequalities across the breast cancer continuum due to racialization have significantly affected women's access to screening programs, diagnosis, treatment and survival. To ensure there is equitable access to quality care there needs to be a better understanding of broader systemic issues. Despite the existence of breast cancer prevention strategies across Canada, inequitable access to screening has barred many women from receiving adequate medical attention. More than half of recent immigrants (those who have been in Canada for less than 10 years) who are eligible for screening did not utilize the program in the previous two years compared to 26 percent of Canadian-born women. Currently, prevention through screening is the primary form of breast cancer control in Canada, thus the differential access to screening among social, geographic, demographic and racial groups can severely affect one's chances of surviving.

This paper provides an overview of inequitable outcomes across the breast cancer continuum due to racialization, with a particular focus on screening. It provides a brief description of racial and ethnic differences in screening utilization, diagnosis and survival drawing on local, national, and international data. It also provides a summary of important barriers to screening in racialized and ethnic minority women. It concludes with implications for Ontario and the Greater Toronto Area (GTA), and identifies possible directions forward.

Racial, ethnic and socioeconomic differences in breast cancer screening have an important impact on the chance of both developing and dying from breast cancer. Therefore, we must acknowledge the negative impact of racialization and racism on health outcomes in Canada. In order to adequately address this problem, there is a need for community-based research that allows us to gain better insight into the perceptions, lived experiences and the multiple and often competing needs of women across racialized and immigrant communities in Ontario.

Background

Breast Cancer Burden

Breast cancer poses a very important public health issue globally, as it is the most commonly diagnosed cancer in women. In Canada¹, about 1 in 9 women is expected to develop breast cancer during her lifetime, and the chance of dying from it is 1 in 28 [1]. It is the second leading cause of death due to cancer in women, after lung cancer [2]. Although the death rate due to breast cancer has been declining in Canada, it still accounts for about 26% of new cancer cases in women, and 14% of all deaths due to cancer [3].

The number of new cases per year (incidence) is an important measure of the impact of breast cancer on people's lives, and helps to describe changes in breast cancer rates over time. Across Canada, Ontario has the highest incidence of breast cancer for all age groups with over 9,000 new cases in 2012, and 2000 deaths due to the disease [2, 4].

Women over the age of 50 have the highest risk of developing breast cancer. The number of new cases for women aged 50-69 in Ontario is almost 3 times higher than the number of women who develop breast cancer in all other age groups (Fig. 1). This accounts for over half of all cases [3].

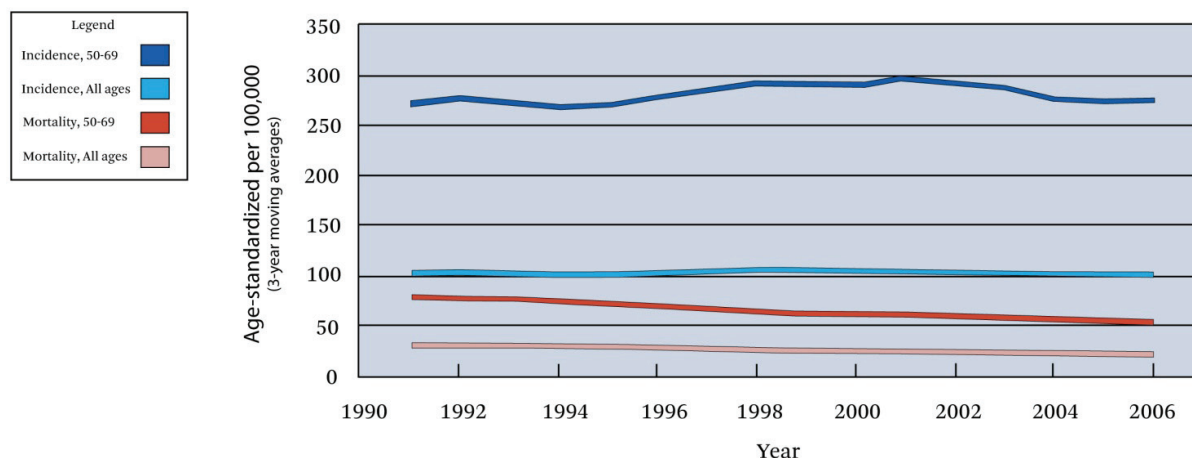


Figure 1: Breast cancer incidence and death rates for women of all ages compared to women between the ages of 50-69 in Ontario [5].

While women over 50 may be at greatest risk for breast cancer, younger age groups are also affected as an estimated 18% of new cases will occur in women under the age of 50 [3].

Although the exact cause of breast cancer is unknown, there are a number of factors which are known to increase the chance of developing the disease. These factors range from biological to demographic to lifestyle and environmental determinants [6]

Early diagnosis and treatment are the most important public health strategies in the control of breast cancer. Deaths due to breast cancer have reduced significantly in the past two decades in Ontario, and

¹ These figures, summarized by the Public Health Agency of Canada (PHAC) are taken from the Canadian Cancer Registry Database. They may include cases of Ductal Carcinoma In Situ (DCIS) a non-invasive, non life threatening form of breast cancer.

across Canada. Advancements in early diagnosis (through screening) and improved systemic treatments for breast cancer mean that a large proportion (87%) of women who develop breast cancer in Ontario survive [5].

Despite these achievements, significant challenges remain unaddressed. Inadequate and inequitable access to screening services is a substantial problem faced by some women. Research shows that immigrants and racialized women are particularly at a disadvantage, as they often face significant barriers in accessing preventive care. Because of this, racialized women and immigrants have some of the lowest utilization of screening services in Canada [7]. This means that among these women who do develop breast cancer, there is a higher likelihood for it to be more serious and detected at an advanced stage which reduces their chance of survival [8].

Defining Racialized Groups

Racialization is the process by which racial groups come to be categorized as different and, on that ground, subjected to differential and unequal treatment. In Canada, racialized groups have been defined as non-Caucasian, non-Aboriginal ethno-cultural groups which include Black, South Asian, Chinese, Arab/West Asian, South East Asian, Filipino, Latin American, Korean, Japanese, and Pacific Islanders [9].

Role Of Social Determinants And Racialization In Health

The impact of social determinants of health on the health outcomes of racialized and immigrant people are well documented [10-12]. These factors include the social and economic conditions (for example, income, education, housing, neighbourhoods, social networks, health care access) which shape the health and well-being of individuals and communities and have a powerful influence on the differences in health which are associated with being a member of a disadvantaged racial/ethnic group. In recent years, awareness has increased about factors beyond socio-economic conditions that shape the health of racialized Canadians and how race and racism play an independent role.

Health Equity

Health equity has been defined as the absence of differences in health that are unnecessary, avoidable, unjust and unfair among groups of people [13]. Although health inequities (the absence of equity) can affect groups of people who are disadvantaged socially, demographically, or geographically, inequities due to racialization have been known to significantly affect people's health, and are largely rooted in the wider social determinants of health. Applying a health equity lens to breast cancer is very important because there is evidence to suggest the existence of racial differences across the breast cancer continuum. This means that disparities exist not only in screening, but in diagnosis, treatment, and survival. However, ensuring equity is embedded across the breast cancer continuum, both in access and quality of care, requires a better understanding of the broader system that yields disparities. In particular, understanding the nature of disparities, groups who are affected or are at risk, systemic and structural barriers, and opportunities

for effective points of intervention at various levels of the system, are key to driving equity into action.

Purpose

This paper provides an overview of inequitable outcomes across the breast cancer continuum due to racialization, with a particular focus on screening. It provides a brief description of racial and ethnic differences in screening utilization, diagnosis and survival drawing on local, national, and international data. It also provides a summary of important barriers to screening in racialized and ethnic minority women. It concludes with implications for Ontario and the Greater Toronto Area (GTA), and identifies possible directions forward.

Evidence Of Inequities In Breast Cancer

Why Screening Is Important?

Prevention through screening is the primary form of breast cancer control in Canada, as early detection and treatment are key to improving survival rates and reducing the risk of death for women who are diagnosed. Although several forms of screening methods have been available for women, including breast self-exams and clinical breast exams (physical examinations performed by a health professional), screening by mammography (X-ray of the breast) is now the most widely recommended form due to its clinical effectiveness² [15]. Research suggests that regular screening by a mammogram can significantly lower the risk of dying from breast cancer, and is most beneficial for older women between the ages of 50-69 [16, 17]. Mammography screening is the most effective method for detecting cancer early in women who show no symptoms while the cancer is still small and the success of treatment options is higher. In Ontario, there is an organized breast cancer screening program where all women between the ages of 50-74 are invited for screening every two to three years [4]. Because routine mammography screening is restricted to women between the ages of 50-69, women below this age are typically not screened unless a risk factor has been identified.

Differential access to screening among social, geographic, demographic, and racial groups is a key point in which inequities come in the breast cancer continuum, therefore, it is an important point of intervention for achieving health equity.

Screening In Racialized And Disadvantaged Women

Despite the existence of organized breast cancer screening programs across Canada, inequitable access to screening is a pervasive problem faced by some women. In particular, research on screening use in

2 Mammography is not without controversy as a screening tool. A recent article in the NY Times surfaces the issue of false positives, and the value of mammography as a preventive tool: <http://www.nytimes.com/2013/12/30/opinion/breast-cancer-screenings-what-we-still-dont-know.html>. Similarly, a new Canadian study published in the BMJ, raises questions about the effectiveness of annual mammography in reducing mortality from breast cancer for women 40-59 beyond that of physical examination or usual care (Miller, A., et al., *Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Cancer Screening Study: randomized screening trial*. BMJ, 2014. 348.)

Canada has shown that specific minority and immigrant groups experience lower screening rates than the rest of the population [7]. For example, more than half (57%) of recent immigrants (those who have been in Canada for less than 10 years) who were eligible to receive screening did not in the previous two years compared to 26 percent of Canadian-born women [7]. Within immigrant groups, those from Asia were more likely to have lower screening rate than those from Europe. This research further noted that lower use of screening was also common in women with lower income and education, women who were smokers, and those who lack a regular family physician.

New research by the Canadian Partnership Against Cancer confirms the continued existence of disparities in screening [18]. Using data from the Canadian Community Health Survey they explore patterns in breast screening by geography, income, and immigrant status. The findings point to no discernable differences in screening based on geographical location (rural versus urban), however, trends related to income and immigration status point to important differences for some women. Screening rates for breast cancer for women aged 50-69 are lower for low income (61.1%) versus mid and higher income households (about 77%). For women who are recent immigrants the rates are even lower (40.6%), compared to longer term immigrants (70.0%) and Canadian born women (74.2%) in terms of breast cancer screening [18].

Qualitative and regionally based research evidence suggests that some racialized Canadian women are less likely to be screened than other population groups [19]. In a review of the literature examining factors that influence participation in mammography screening in Canada, Hanson et al. found that belonging to an ethnic minority was among the most frequent barriers to screening [20]. This could be possibly related to language and social factors which can impede access to preventive care services. It may also be explained by cultural differences in attitudes, beliefs and emotions regarding breast cancer screening which may differ between ethnic and racial groups [21]. In a study that focused specifically on Asian immigrant women (East Asian, Southeast Asian, South Asian, and Arab/West Asian), results indicated they were less likely to have obtained screening recently or ever in comparison to Canadian-born women [22]. The study suggested that the ability to speak either English or French was significantly associated with screening behaviour in Asian women, while income, education, and marital status may also play a role. In a recent study focusing on high risk geographic areas in Peel region with high concentration of South Asian population, results showed breast cancer screening rates as low as 48.5% compared to 63.4% in the general population of Ontario [23]. These results are supported by other research on the impact of racialization and racism on health outcomes in Canada, highlighting lower screening levels in Chinese and South Asian women [10].

Racialized Canadians are a highly diverse group, differentiated by ethnicity, race, country of birth, language, among other factors. Although the Canadian literature does highlight lower breast cancer screening utilization among minority groups, for certain racialized communities such as Africans, West Indians, and Arabs, to name a few, there is little or no knowledge on their screening practices or the barriers they face. However, there is a strong body of international literature that documents racial and ethnic disparities in breast cancer screening and focuses on the status of Black women in particular. For example, in the UK, population level research on screening use found that communities with a large Black population had the lowest rate of screenings, with approximately 53 percent less likelihood of getting screened, while White women were found to have the highest likelihood of getting screened [24]. This study also found that having a higher income was associated with higher uptake of screening, but found

no difference due to age. Similar findings also emerge in the US, with research studies indicating a less likelihood of screening among African Americans, Hispanics, Asians, and Native Americans [8]. While there is evidence of a decline in the overall gap in screening use in the US, research suggests that it still remains of concern for immigrants and racial/ethnic minorities including African Americans, Asian Americans, and Native Americans [25]. The findings of this study also suggest that among all the under-served racialized population groups, Native Americans had the lowest rate of screening utilization and increasing gap over time.

Disparities In Breast Cancer Outcomes

Racial, ethnic and socioeconomic differences in breast cancer screening have an important impact on the chance of both developing and dying from breast cancer. In Canada, breast cancer outcomes are related to many factors including age, race, ethnicity, socio-economic status, and geography [4]. Similar to inequities seen in screening use, women who are more affluent tend to have a higher incidence of breast cancer compared to those who have lower incomes (Fig. 3). However, women who belong to the highest income group have a 4.5% higher chance of surviving from breast cancer than women in the lowest income group, suggesting that although low-income women tend to have lower incidence rate, their chance of dying from breast cancer once they are diagnosed is higher in Canada [4].

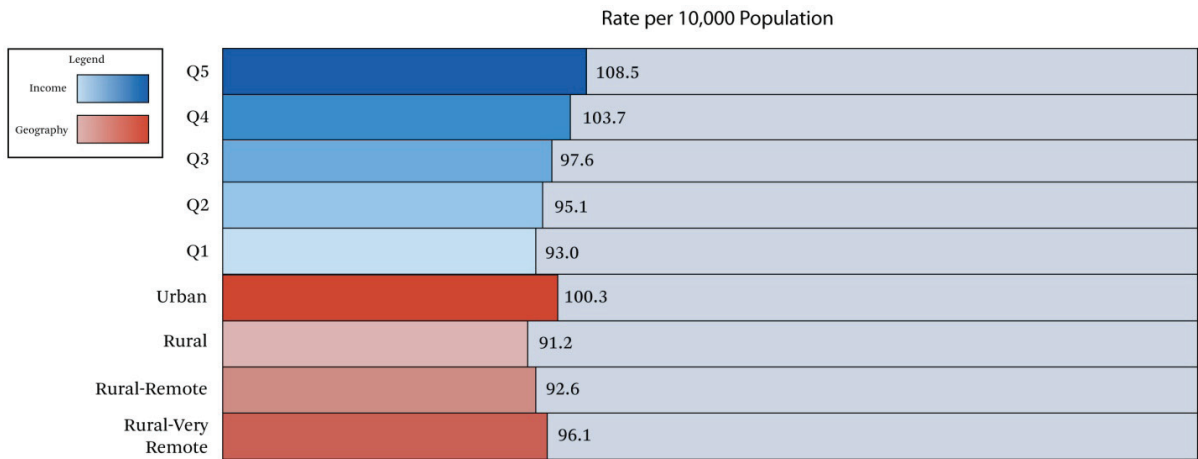


Figure 2: Breast cancer incidence rate for women of all ages by income and area of residence. Adapted [4].

Whether someone is an immigrant or Canadian-born also affects their chance of developing breast cancer. Research shows when women immigrate to Canada, although their incidence of breast cancer is lower than Canadian-born women, their risk increases over time and becomes closer to that of Canadian-born women [26]. This may be explained by environmental and behavioural risk factors which they become exposed to after immigration to Canada [26]. For example, factors such as stress, sedentary lifestyles, dietary changes, unemployment/low-income status, and engaging in health risk behaviours such as smoking and drinking have been associated with a decline in the health status of immigrants [11].

A strong body of evidence also confirms racial and ethnic disparities in breast cancer outcomes [25, 27, 28]. Evidence from the US suggests that although White women tend to have higher incidence of breast

cancer, Black women have a much higher chance of dying from it [25, 29]. An analysis of 20 studies that examined the chance of survival in African American women compared with White American women suggests that African American women with breast cancer have 19% greater risk of dying from it, even after accounting for factors such as their age and socioeconomic status³ [30]. Other research findings suggests as high as a 40 percent higher chance of death due to breast cancer for African-American women than White women [29]. Similar evidence was found in the UK, where higher incidence of breast cancer is reported for White women in comparison to racialized women (Black, South Asians, Chinese), although Black African women are found to have the poorest chance of survival among all the groups [31]. This research also notes that Black women in the UK have a higher likelihood of being diagnosed when their breast cancer has reached advanced stage, even after accounting for age and socioeconomic status differences among the groups. These findings are confirmed by US research on racialized women which suggests that Black women have an increased risk of a more aggressive, advanced-stage breast cancer diagnosis than Native, Asian, and White American women [8]. In Canada, an Ontario study suggests that First Nations women are also more frequently diagnosed with later stage breast cancer than non-First Nations women [32]. This study noted that among First Nations women, late-stage diagnosis was also associated with lifestyle factors such as being overweight, as those who were overweight had 3-5 times higher likelihood of being diagnosed at a later stage when the cancer is more likely to spread and the chance of death is higher.

The higher death rates found among racialized women, than white women, may be largely due to late-stage diagnosis which has been found to strongly determine survival rates in cancer patients [8]. Although various factors could explain the differences in the stage of breast cancer diagnosis reported for racialized women in comparison to White women, access to screening, mammography screening in particular, has been known to play a strong role. For example, in First Nations women of Ontario, those who were not screened for breast cancer were 5 times more likely to be diagnosed with late-stage breast cancer [32]. In the US, differences in screening history accounted for the differences in advanced-stage cancer rates between White women and African American women [8]. In a comparison of breast cancer survival in Canada and the United States, greater access to a universal health care system is believed to give Canadian women in low-income areas an advantage over American women in low income areas [33]. Other factors found to be associated with the consistent gap in death rates between racialized and non-racialized women include knowledge about breast cancer [34], racial differences in breast cancer biology [27], as well as socio-economic factors and inequitable access to follow-up care and treatment after diagnosis with breast cancer [8, 29].

Determinants And Barriers Of Screening In Racialized And Disadvantaged Women

There are many determinants and barriers that influence participation in breast cancer screening for women. These determinants range from broader systemic factors such as income, education, health

3 The differences in breast cancer rates and outcomes in African American women have also raised questions about differences in tumor biology and in risk factor among researchers, see (Ademuyiwa et al 2010).

care access to more individual level determinants such as perceptions, cultural beliefs, knowledge about breast cancer, and health seeking behaviours [7, 20, 35]. The most commonly reported reasons for not having a mammogram by Canadian women include not thinking it is necessary, not getting around to it, and fear [7]. Access barriers related to the health service delivery, such as physicians not emphasizing the necessity of screening, were also reported. Findings from this research further suggest a link between socioeconomic factors and how women perceive screening, as women with lower income and education were more likely to report screening as unnecessary. This could explain the consistent finding of lower screening rates among low income women that surface both nationally and internationally. Other barriers related to personal perceptions include fear of being diagnosed with cancer, and concerns about mammography procedure such as pain, radiation exposure, and feeling of embarrassment when being tested [20]. While these perceptions play a key role in deterring some women from getting screened, other important barriers include the lack of previous screening behaviour (e.g., for other cancers, or other health conditions), an unhealthy lifestyle, limited knowledge of breast cancer and screening, limited access to a health care provider, and the lack of recommendation for screening by health care providers [20].

These findings appear to be pronounced in racialized women, and therefore play an important role in contributing to the existing inequities in screening rates between racialized and non-racialized women. In particular, some barriers such as poor knowledge of breast cancer, negative perceptions around risk, and health care related factors such as accessing physicians and lack of physician recommendation for screening appear to be consistent markers of lower mammography screening in racialized groups. A recent study which focused on South Asian immigrant women in Toronto found that 85% of women who participated in the study had never had a mammography screening [19]. According to the women who participated in this research, eight categories of barriers were identified as important: depending on family; access to a screening facility; language and transportation, access to a physician; fear of cancer; self-care; personal beliefs and practices; and lack of knowledge. Family dependence was rated as the most important barrier because of concerns over imposing a burden (financial, time) on family members if screening is sought. For example, women raised concerns about asking their children to arrange for transportation or having them accompany them to screening which would mean time off work for their children who were immigrants themselves and facing financial constraints. Similar observations also emerge from the US ranging from personal barriers related to knowledge and attitudes, to access barriers related to the role of physicians (not recommending testing) as significant obstacles for women [35]. Some research found that lack of physician recommendation was a major cause of low mammography screening for women in the US, and that this was influenced by race/ethnicity, as findings suggest that physicians were less likely to make a recommendation for Black and Hispanic women compared to White women [35, 36]. Other factors which have been shown to affect physician recommendation for screening include the age and socioeconomic status (education and income) of patients [36].

These findings, especially the influence of poor knowledge, also surface in other studies focusing on women from various racialized and ethnic communities. A study on Iranian immigrant women in Toronto found that women participants had very little knowledge of breast cancer, screening, and breast health practices, contributing to lower screening rates in racialized women [37]. According to a review of the evidence, poor knowledge of breast cancer and its associated risk and personal perceptions (for example, the belief that breast cancer is a disease that affects only White women, or the presence of stigma

associated with screening) were impediments to screening for Black women in both Britain and the US [38]. Religious and spiritual beliefs were other factors associated with screening behaviours in Black women, at sometimes facilitating the seeking of screening, and other times impeding it as individuals felt it was the will of God. In comparison to White women, women from ethnic minority groups in the UK (Indian, Pakistani, Bangladeshi, Chinese, African, and Caribbean) also displayed less knowledge about breast cancer screening [39]. This may be due to the lack of breast cancer screening and breast health educational needs that are informed by women from ethnic minorities [40]. Furthermore, the lack of social support has been reported as a barrier for women from ethnic minority groups [41].

Implications For Ontario And The Greater Toronto Area

The above findings have a number of implications for breast cancer burden in Ontario and the Greater Toronto Area more specifically. First, the number of new breast cancer cases in Ontario are mostly found in older women, peaking between the ages of 50-69 compared to other age groups [5]. This means as the population of Ontario ages and life expectancy improves, this disease continues to pose a public health challenge as its impact on the lives of Ontarian women will likely continue to increase.

Second, and more importantly, the population of Ontario, especially the GTA, is becoming more diverse with the highest immigrant and racialized population groups in comparison to the rest of Canada. According to the latest research, almost 50% of city of Toronto residents belong to racialized communities (29% for Ontario) and almost 50% are immigrants [42]. Of the immigrant population, one third have arrived in Canada in the past 10 years. The health inequities that racialized and immigrant women in Ontario face is well established, particularly as they relate to broader social determinants of health, such as health care access, income, education, housing, among others. For example, the evidence shows that new immigrants and people in low-income neighbourhoods are less likely to have access to a primary care physician compared to Canadian-born population [43]. Furthermore, this research indicates that among those who do have a physician, racialized groups, new immigrants, and Aboriginal women are more likely to report unmet health care needs and problems with accessing services from their physician. These key determinants of health are known to shape people's health behaviours [44], and influence women's likelihood of seeking screening and breast health practices. Both the growing population of racialized/immigrant communities, and the concentration of social disadvantage and marginalization in these communities pose a serious problem for Ontario and the GTA. As the barriers that prevent women from these communities to obtain screening continue to exist, it is expected that disparities in screening rates will continue to exist, or may even rise. This in turn may contribute to an increased risk of being diagnosed with breast cancer at later stage, contributing to a higher death rate for these women in comparison to Canadian-born, non-racialized women.

Moving Forward

Addressing existing racial and ethnic inequities in breast cancer detection and diagnosis will mean tackling the key barriers to screening faced by racialized and immigrant women. These barriers vary across different communities, as there is no uniform experience of racialization among the various

communities. As such, there is a need for community-based research that allows us to gain better insight into the perceptions, experiences and the multiple and often competing needs of women across racialized and immigrant communities in Ontario. There are many racialized groups whose beliefs, health seeking behaviours and practices we know very little about. We must ask ourselves, whose voices are we missing? How can we effectively engage and reach out to these communities who may often be isolated? How do the barriers and conditions these diverse communities face regarding breast health practices and breast cancer screening differ? Learning from women in different communities can help us design community focused preventive strategies and develop a body of local evidence that is informed by lived experience.

However, this must not impede us from acting and starting to test out local solutions in place. While further community-based research is vital to improving our understanding of the barriers diverse women face in getting screened, and would contribute to the design of community-driven interventions to enhance accessibility of breast cancer screening services, there is adequate knowledge to begin to identify solutions to the known barriers. Existing research has suggested various strategies which place an emphasis on the need to develop tailored and culturally appropriate interventions for women to overcome knowledge and structural barriers, address misconceptions, and promote screening practices [45, 46]. Recent research by Lobb, Pinto and Lofters [47] has begun to explore this, employing concept-mapping as a tool in facilitating the knowledge-to-action process with community stakeholders (residents and representatives from agencies). Working with members of, and agencies serving a South Asian community in Peel, this research has tried to shift discussions from the identification of barriers alone, to identify opportunities for action locally that draws on the insights and experiences of all stakeholders in a participatory fashion.

Community research by Ontario Women's Health Network (OWHN) points to some meaningful recommendations for change in the areas of breast screening, education and promotion, as well as service provision and the accessibility of breast screening information. Research by the Centre for Research on Inner-City Health (CRICH) echoes these ideas, also offering some attention to the organizational barriers at health and non-clinical services operating within communities [23]. In addition, there may be value in considering innovative methods for outreach and engagement of women in marginalized or disadvantaged communities, including the use of mobile breast cancer screening units, such as those operating in communities in Northwestern Ontario through the OBSP, and drawing on the lessons of such programs to inform community grounded options for improving access to information, to screening, and to service provision for women across communities. Finally, there is a need to consider the social determinants of health as they influence women's experiences related to cancer, as noted in the recent Code Red project in Hamilton on cancer [48]. Social and economic factors need to be considered from prevention through treatment and follow up options for women.

References

1. Public Health Agency of Canada. Breast Cancer. Available from: http://www.phac-aspc.gc.ca/cd-mc/cancer/breast_cancer-cancer_du_sein-eng.php.
2. Cancer Care Ontario. Breast Cancer Facts. 2012 [cited 2013; Available from: <https://www.cancercare.on.ca>].
3. Canadian Cancer Society's Advisory Committee on Cancer Statistics, Canadian cancer statistics 2013, 2013, Canadian Cancer Society: Toronto, ON.
4. Canadian Partnership Against Cancer, Breast cancer control in Canada: a system performance special focus report., 2012, Canadian Partnership Against Cancer: Toronto.
5. Cancer Care Ontario, Ontario breast screening program: 20th anniversary report 1990-2010, Cancer Care Ontario: Toronto, Ontario.
6. National Breast and Ovarian Cancer Centre, Breast cancer risk factors: a review of the evidence, 2009, National Breast and Ovarian Cancer Centre: Surry Hills, NSW.
7. Shields, M. and K. Wilkins, An update on mammography use in Canada. Health Reports, 2009. Statistics Canada (Catalogue no. 82-003-XPE).
8. Smith-Bindman, R., et al., Does utilization of screening mammography explain racial and ethnic differences in breast cancer? *Annals of Internal Medicine*, 2006. 144(8): p. 541-553.
9. Galabuzi, G.-E., Canada's Creeping Economic Apartheid, 2001, CSJ Foundation: Toronto.
10. Nestel, S., Colour coded health care: the impact of race and racism on Canadians' health, 2012, Wellesley Institute: Toronto, ON.
11. Hyman, I., Immigration and health: reviewing evidence of the healthy immigrant effect in Canada, 2007, CERIS: Toronto.
12. Levy, J., D. Ansara, and A. Stover, Racialization and health inequities in Toronto, 2013, Toronto Public Health: Toronto, ON.
13. Whitehead, M., The concepts and principles of equity in health. *Int J Health Serv*, 1992. 22: p. 429-445.
14. Miller, A., et al., Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Cancer Screening Study: randomized screening trial. *BMJ*, 2014. 348.
15. Canadian Task Force on Preventive Health Care, Breast cancer screening, 2011, Canadian Task Force on Preventive Health Care: Hamilton, ON.
16. Gøtzsche, P.C. and M. Nielsen, Screening for breast cancer with mammography. *Cochrane Database of Systematic Reviews*, 2011(1): p. CD001877. DOI 10.1002/14651858.CD001877.pub4.
17. Harris, R., J. Yeatts, and L. Kinsinger, Breast cancer screening for women ages 50 to 69
o;years a systematic review of observational evidence. *Preventive Medicine*, 2011. 53(3): p. 108-114.
18. CPAC, Examining Disparities in Cancer Control: A sytem performance special focus report, 2014, Canadian Partnership Against Cancer: Toronto, ON.
19. Ahmad, F., et al., Concept Mapping with South Asian Immigrant Women: Barriers to Mammography and Solutions. *Journal of Immigrant and Minority Health*, 2012. 14(2): p. 242-250.
20. Hanson, K., et al., Factors influencing mammography screening in Canada: An integrative review of the literature. *Curr Oncol*, 2009. 16(5).
21. Magai, C., et al., Diversity matters: Unique populations of women and breast cancer screening. *Cancer*, 2004. 100(11): p. 2300-2307.
22. Sun, Z., et al., Breast cancer screening among Asian immigrant women in Canada. *Cancer Epidemiology*, 2010. 34(1): p. 73-78.
23. CRICH, Making it Happen Together. Increasing Cancer Screening Rates for South Asians in Peel,

- 2013, Centre for Research on Inner City Health, Keenan Research Centre, Li Ka Shing Knowledge Institute: St. Michael's Hospital, Toronto, ON.
24. Renshaw, C., et al., Estimating attendance for breast cancer screening in ethnic groups in London. *BMC Public Health*, 2010. 10(1): p. 157.
 25. Peek, M. and J. Han, Disparities in screening mammography. *Journal of General Internal Medicine*, 2004. 19(2): p. 184-194.
 26. Kliewer, E.V. and K.R. Smith, Breast Cancer Mortality Among Immigrants in Australia and Canada. *Journal of the National Cancer Institute*, 1995. 87(15): p. 1154-1161.
 27. Ademuyiwa, F.O., et al., Breast Cancer Racial Disparities: Unanswered Questions. *Cancer Research*, 2011. 71(3): p. 640-644.
 28. Whitman, S., J. Orsi, and M. Hurlbert, The racial disparity in breast cancer mortality in the 25 largest cities in the United States. *Cancer Epidemiology*, 2012. 36(2): p. e147-e151.
 29. Centers for Disease Control and Prevention. Breast cancer. 2012; Available from: <http://m.cdc.gov/en/VitalSigns/breast-cancer>.
 30. Newman, L.A., et al., Meta-Analysis of Survival in African American and White American Patients With Breast Cancer: Ethnicity Compared With Socioeconomic Status. *Journal of Clinical Oncology*, 2006. 24(9): p. 1342-1349.
 31. Jack, R.H., E.A. Davies, and H. Moller, Breast cancer incidence, stage, treatment and survival in ethnic groups in South East England. *Br J Cancer*, 2009. 100(3): p. 545-550.
 32. Sheppard, A.J., et al., Detection of later stage breast cancer in First Nations women in Ontario, Canada. *Can J Public Health*, 2010. 101(1).
 33. Gorey, K., Breast cancer survival in Canada and the USA: meta-analytic evidence of a Canadian advantage in low-income areas. *International Journal of Epidemiology*, 2009. 38(1543-1551).
 34. Forbes, L.J.L., et al., Breast cancer awareness and barriers to symptomatic presentation among women from different ethnic groups in East London. *Br J Cancer*, 2011. 105(10): p. 1474-1479.
 35. George, S.A., BARRIERS TO BREAST CANCER SCREENING: AN INTEGRATIVE REVIEW. *Health Care for Women International*, 2000. 21(1): p. 53-65.
 36. O'Malley, M.S., et al., The association of race/ethnicity, socioeconomic status, and physician recommendation for mammography: who gets the message about breast cancer screening? *American Journal of Public Health*, 2001. 91(1): p. 49-54.
 37. Vahabi, M., Knowledge of Breast Cancer and Screening Practices Among Iranian Immigrant Women in Toronto. *Journal of Community Health*, 2011. 36(2): p. 265-273.
 38. Banning, M., Black women and breast health: A review of the literature. *European journal of oncology nursing : the official journal of European Oncology Nursing Society*, 2011. 15(1): p. 16-22.
 39. Robb, K., et al., Ethnic disparities in knowledge of cancer screening programmes in the UK. *Journal of Medical Screening*, 2010. 17(3): p. 125-131.
 40. Watts, T., et al., Breast health information needs of women from minority ethnic groups. *Journal of Advanced Nursing*, 2004. 47(5): p. 526-535.
 41. Katapodi, M., et al., The Influence of Social Support on Breast Cancer Screening in a Multicultural Community Sample. *Oncology Nursing Forum*, 2002. 29(5): p. 845-852.
 42. City of Toronto, 2011 National Household Survey: Immigration, Citizenship, Place of Birth, Ethnicity, Visible Minorities, Religion and Aboriginal Peoples, 2013, City of Toronto: Toronto, ON.
 43. Bierman A.S, et al., Access to Health Care Services, in Project for an Ontario Women's Health Evidence-Based Report: Volume 1, A.S. Bierman, Editor 2009/10: Toronto.
 44. Braveman, P., S. Egerter, and D.R. Williams, The Social Determinants of Health: Coming of Age. *Annual Review of Public Health*, 2011. 32(1): p. 381-98.

45. Han, H.-R., et al., A Meta-Analysis of Interventions to Promote Mammography Among Ethnic Minority Women. *Nursing Research*, 2009. 58(4): p. 246-254 10.1097/NNR.0b013e3181acof7f.
46. Schoueri-Mychasiw, N., S. Campbell, and V. Mai, Increasing Screening Mammography Among Immigrant and Minority Women in Canada: A Review of Past Interventions. *Journal of Immigrant and Minority Health*, 2013. 15(1): p. 149-158.
47. Lobb, R., A. Pinto, and A. Lofters, Using concept mapping in the knowledge-to-action process to compare stakeholder opinions on barriers to use of cancer screening among South Asians. *Implementation Science*, 2013. 8(37).
48. Buist, S., Cancer: A Code Red Project, in *The Hamilton Spectator* 2013, Torstar Corporation, Metroland Media: Hamilton, ON.